

DOCUMENT RESUME

ED 363 269

IR 016 256

AUTHOR Peak, Janie; Dewalt, Mark W.
TITLE Effects of the Computerized Accelerated Reader Program on Reading Achievement.
PUB DATE Feb 93
NOTE 18p.; Paper presented at the Annual Meeting of the Eastern Educational Research Association (Clearwater Beach, FL, February 17-22, 1993).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Computer Assisted Instruction; Intermode Differences; Junior High Schools; Junior High School Students; Middle Schools; Multiple Regression Analysis; *Reading Achievement; *Reading Improvement; *Reading Instruction; Reading Research; Student Characteristics
IDENTIFIERS Gaston County School District NC; Middle School Students

ABSTRACT

The objective of this study was to determine if the Accelerated Reader Program significantly improved reading skills of middle-school students. This computerized enrichment program combines over 750 classics with computers. Subjects for the study were college-prep freshmen from two junior high schools within the Gaston County (North Carolina) school system. There were no significant differences between the two groups regarding demographics or basic curriculum expectations. Total CAT (Children's Assistance Trust) reading scores were utilized for this study, and scores were taken from the third, sixth, and eighth-grade cumulative records and compared. Additional information was obtained from the schools' 10-year reports and surveys that were handed out to students. Results indicate that the use of the computerized reading system had some direct bearing on the mean gain of CAT reading scores over a 5-year period. Results illustrate that Cherryville Junior-Senior High School started with a lower mean total CAT score (726) than Grier students (736) but had a higher mean total reading score by the eight grade after having used the program for several consecutive years. Statistical tables showing reading gains of 50 students studied are appended. (Contains 18 references.) (Author/KRN)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED 363 269

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- ☐ This document has been reproduced as received from the person or organization originating it.
- ☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Effects of the Computerized Accelerated Reader Program on
Reading Achievement

Janie Peak
Teacher
Cherryville Junior-Senior High School
Cherryville, North Carolina

Mark W. Dewalt
Assistant Professor of Education
Lenoir-Rhyne College

A paper presented at the annual meeting of the
Eastern Educational Research Association
Clearwater Beach, Florida

February 17 - 22, 1993

"PERMISSION TO REPRODUCE THIS MATERIAL
IN OTHER THAN PAPER COPY HAS BEEN
GRANTED BY

Janie Parks Peak

100-000000
20016256

Running Head: Computerized Reading Study

Abstract

The objective of this study was to determine if the Accelerated Reader Program significantly improved reading skills of middle-school students. This computerized enrichment program combines over 750 classics with computers. Subjects for this study were college-prep freshmen from two junior-high schools within the Gaston County School System. There were no significant differences between the two groups regarding demographics or basic curriculum expectations. Total CAT Reading Scores were utilized for this study, and scores were taken from the third, sixth, and eighth-grade cumulative records and compared. Additional information was obtained from the schools' ten-year SACS reports and surveys that were handed out to the students. Results indicate that the use of the computerized reading system had some direct bearing on the mean gain of CAT reading scores over a five-year period. Results illustrate that Cherryville Junior-Senior High School started with a lower mean total reading CAT score (726) than Grier students (736), but had a higher mean total reading score by the eighth grade after having used the program for several consecutive years.

Effects of the Computerized Accelerated Reader Program on Reading Achievement

INTRODUCTION

The objective of this study was to see if the Accelerated Reader Package significantly improved reading skills of middle-school students. The Accelerated Reader is a computerized enrichment program which combines over 750 classics with computers. Designed for ages 8-18, this package's selling point is that it motivates students to read more and better books and increases individual reading scores as much as 3.09 years' reading ability in as little as ten months (Horizons, 1991). Students can read and test at their own pace. Basically, after they have chosen and read books from the AR list, students go to a computer and take an individualized test. A point system is employed, and the AR program keeps track of their performance and generates reading reports for staff, parents, and students. Moreover, a reward system usually accompanies and enhances this process.

One of the "hottest" topics at the 1991 American Education Research Association convention centered around the use of technology in curriculum design. Computers have generated vast amounts of information in the field of education within the last few years, and there has been a shift in the type of technology which is now being reported (Poplin, 1991). The author of this article, which appeared in The Computing Teacher, indicates that previous research in technology tended to focus on the comparison of student progress facilitated by the introduction of technology to student progress facilitated by traditional instructional procedures. There has been little, if any, attempt to relate the two different approaches to some basic understanding of the learning process. However, Poplin confirms that now there is a shift toward technology research which is investigating theories of learning and attempting to determine the relationship between the use of technology and certain learning processes.

The use of technology, in particular the microcomputer, has served as a tremendous catalyst and instructional liason in the area of reading. In the past, part of the problem with teaching reading has been that no one is certain how people read and think (Rickelman & Henk, 1990). Results of studies conducted in the late 80's were reported in The Reading Teacher (1990), and they revealed how the computer is being used in conjunction with CAT scans and other X-ray technology to find the causes of reading-related problems, in particular those found in dyslexics. Computers help scientists gain insight into brain structure and function as they relate to the complex brain activities that take place during the reading process. In a follow-up article, these same authors report four major discoveries based upon this type of research: (1) the right side of the brain is much more active during reading than once thought; (2) oral and silent reading processes, while similar, are by no means identical in nature; (3) reading consistently involves certain brain sites including specific parts of temporal, frontal, and parietal lobes; and (4) differences in activity levels exist between dyslexics who rely on sound cues and those who rely on visual clues (Rickelman & Henk, 1990, p. 335).

This knowledge, if properly utilized, will enable researchers and educators to use computers to help match what a reader is seeing with the internal mental processes that are being executed concurrently. Two

professors of reading education discussed in The Clearing House how learning theory in the reading classroom can be matched to particular computer software (1991). Williams and Hoover, from the University of Oklahoma, categorize the programs under the two main approaches to teaching reading: the skill and practice approach and the holistic approach. Both agree that "computer software can be used effectively in reading instruction if the software parallels the language-learning approach used by the teacher" (p. 335). Approximately 70% of the software they examined consisted of skill and practice programs which emphasize phonics and word recognition. The Programmed Logic for Automatic Teaching Operation (PLATO) curriculum project was found to be one such program because it included a large number of items for students who miss a response and provided appropriate instructional responses to all students. The authors concluded that, if used correctly, skill and practice software "provides for individualization, conforms to the individual's needs, and uses a computer's appeal as a means of presenting information" (Williams & Hoover, p. 335).

The authors, Williams and Hoover, also address the holistic approach, which combines reading and writing activities with language enriching experiences. Williams and Hoover agree that since holistic approaches promote social interaction among young people, teachers need to construct a cooperative learning environment for the whole language classes so that the computer is used in ways other than a delivery system. The authors cite Freisinger, Sargeant, and Weibel (1991) who suggest a procedure for choosing software according to the holistic approach: (1) does it interact with the reader; (2) does it engage the reader in text-based and knowledge-based processing; and (3) does it build new background knowledge as well as build on existing knowledge?

In a related article in Teaching K-8, Allen (1992) critiques several software programs that have proven to be extremely instrumental in assisting with this integrated instruction of reading. The focus of much of the newer software is directed toward the "writing to read" approach which utilizes IBM computers with speech. Forty-two phonemes are presented, and the letter/sound combinations are supported at work center stations. Software now enables songs to complement phonemic sound lessons, and these songs have been recorded using the natural sequence of cycle words. An advocate of the whole language approach, Allen discusses several new mouse-driven, literature-based programs that assist educators in building comprehension skills. In one such program, Stories and More, students select single words or entire screens to be read to them through digitized speech. Two reading speed options help the instructor individualize the program to meet the unique needs of the individual student. Research has proven that students not only enjoy this approach, but that it also enables reading skills to be integrated with all curriculum areas. One strong argument in favor of this system of learning, Allen states, is that existing reading programs can be enriched, and students can move through the levels of Bloom's taxonomy much quicker. Computers provide specific profiles of student achievement and distinguish their particular strengths and weaknesses. Additionally, they can provide samples of students' writing and oral reading which can be used as assessment information for teachers and diagnosticians as well.

One area that has benefited greatly from the computer-assisted approach to reading is remediation. In an article in Reading Improvement, Cutler and

Truss, (1989), note that an adequate sight vocabulary may be the only major obstacle preventing normal reading behavior for many students who have been diagnosed as being reading deficient. The authors point out that historically, the remedial student has lost interest in age-level stories because he encounters so many unknown words per page, and that the normal enhancement of sight vocabulary by learning new words from context is not possible.

However, studies by Cutler and Truss point out that computer assistance can help to compensate for a deficient sight vocabulary by combining interesting age-level reading materials in the form of paperback novels, thus providing continuing gratification and reinforcement for reading. The computer-based system provides immediate assistance in the form of spoken words and brief definitions in context upon request. Their study was designed to see if this approach would benefit junior high school remedial reading students, and it involved the following process. First, popular teenage novels were photocopied and encoded in computer memory. Words that students might not understand, approximately 15 per page, were underlined, and these words were spoken into a microphone, and hence into computer memory stored on floppy disks. Second, students were shown how to work the system, and as the student was allowed to work undisturbed, reading rates were calculated. Subjects received a mean of 14.7 clock hours of computer-assisted reading an average of 19 class periods, and they spent approximately 41 out of 45 minutes per class period reading. Results of this study show that reading became a reinforcing and self-perpetuating activity, students read more and gained comprehension skills, and scores on the Iowa Test of Basic Skills increased. In addition, the "pain of vocabulary-building" was minimized because students could learn new meanings in context without being threatened or distracted (Cutler & Truss, p. 109).

A similar study was conducted in the Netherlands by van Daal and van der Leij (1992). This study was designed to examine the effects of computer-based reading and spelling practice on the development of reading and spelling skills. The experiment, which involved the pre- and post-test technique, involved 11 girls and 17 boys who had been diagnosed with written language disorders. They were on the average 9 years 7 months old and performing two grade levels below expectancy.

The authors report that these subjects practiced hard-to-read words under three conditions: reading from the computer screen, copying from the screen, and writing from memory after presentation on the screen. For all words, whole-word sound was available on call during practice. To assess learning effects, both a dictation and read-aloud task were administered in which nonpracticed control words were also presented. During training, the computer was programmed to keep records of several aspects of the pupils' learning behavior.

Results indicate that copying words from the computer screen resulted in significantly fewer spelling errors on the post-test than writing words from memory (the traditional approach), and that both forms of spelling practice led to fewer spelling errors when compared to only reading words during practice. Computer-assisted instruction, coupled with speech feedback, it was concluded, optimally supports the development of phonological skills in children with written language disorders. Van Daal and van der Leij suggest that spelling tasks should be integrated into computer-based practice programs

for students with reading disabilities, not only for the sake of instructional variation, but also because spelling activities will stimulate both the kind and the amount of cognitive processing that is necessary to overcome reading and spelling problems (1992).

Another similar project was initiated by Wepner (1990). Her study, which involved at-risk eighth graders in an inner-city environment, addressed the question of what it is about the computer that motivates at-risk or disabled students to want to read? The project centered around 85 students who were grouped, according to standardized test results, into six groups ranging in ability level from below average to above average. Each group met for 40 minutes each week in a computer lab and worked with a variety of reading software packages from the Minnesota Educational Computing Consortium. All students had folders in which to record their reactions to each computer session (Wepner, 1991).

Results from this study reflect that students liked this approach to reading instruction for three reasons: first, they preferred this method of instruction because of "their feeling of control over the machine" (p. 265). Second, they enjoyed the social and intellectual interaction with each other, and last, students found the computer to be a private motivational tool which allowed slow readers to progress at their own rate without pressure to keep up with the rest of the class. "Students saw the computer as an opportunity to explore reading without fear of failure, thereby developing a sense of self-control, inner power, and autonomy with their learning" (Wepner, 1990, p. 267).

The second part of her study addressed the effects of computer-assisted instruction on the cognitive, affective, procedural, and psychological needs of the students in the research project. In all four areas, the author found that the particular software chosen had more direct effect on the subjects than any other particular factor. Different disk presentations and modes of learning were introduced for study, and the author concluded that the software's content and concept must be considerate of the needs of the intended user and address a particular reading problem. In addition, results point to the fact that not only does the software need to be cognitively suitable but also procedurally digestible so that students learn from materials that challenge their individual learning styles and encourage them to keep records. The most promising results of Wepner's study was evidenced by increased attention spans, spontaneous comments, self-discipline, increased reading scores, and general excitement about reading.

The correlation between computers and students with special needs was also the subject of an article in *The Computing Teacher* (Schipper, 1991). The author points out that teachers are being asked to teach a new integrated reading and language arts curriculum with "old" materials and ideas which are no longer appropriate. Not only are teachers faced with students of varying levels of ability, with limited proficiency in English, and with physical and learning disabilities, but they are also being held accountable for results on standardized tests.

Schipper, a specialty teacher with Joshua Elementary School in Lancaster, California, offers a series of suggestions concerning how computers can be used to teach reading and literature with all types of students. The author mentions three major approaches. First is the large print word processing where the teacher and student, in conjunction, can use software to facilitate

the teaching of reading. She proposes a variety of methods including generating alphabet books and sentence strips; creating, changing and predicting stories; sequencing events; illustrating words; and generating discussion questions in conjunction with reading logs and journals.

The second methodology revolves around programs which combine text and graphics. Schipper points out that since students are already aware of this technological mode due to the tremendous use of video games, teachers can use computers to reinforce psychomotor and cognitive skills involved in the reading process. Students could make bookmarks, posters, generate bulletin boards and book reports, create mobiles, wordless picture books, write class newsletters, illustrate and write their own stories, and rewrite story endings. Her third suggested approach, involving information/organizer skills necessary for reading, identifies and gives suggestions for the development of such activities as electronic story outliners and timeliners, survey instruments, and semantic webbing and mapping. Vocabulary flash cards, puzzles, and story gameboards would all be, according to this author, excellent motivational tools for any level reader. Schipper believes that students bring to the classroom a mastery of these video skills, and educators need to capitalize and follow-up on the technological knowledge that students already possess.

A third study, the Croydon's Computer Assisted Reading Project (CAR), was outlined in The Times Educational Supplement (Preston, July 20, 1990). This project was set up to follow the reading progress of students in 18 different schools. Six students from each school were subjects of this study, and they were deemed to be at least two years behind their peers. After a year of CAI, 86% were reported to be more motivated by their work; 95% of children labeled "distracted" stuck to their assigned tasks; and 85% showed a much-improved attitude about reading. Most importantly, 25% made significant gains of a year or more on standardized tests, and some of the greatest gains were made by the students who had been farthest behind. Not only did reading scores improve, but results indicated that 77% of these same pupils made writing gains as well. Preston reported that these identified children were quickly able to share in other class activities that involved more sophisticated cognitive and psychomotor skills.

One segment of society that is often overlooked in the process of educational research and reading instruction is the growing number of illiterate adults in the United States. Adult literacy programs face a multitude of problems ranging from funding and drop-out rates to the inability to find age-appropriate materials necessary to teach and motivate this fast-growing segment of society. Finnegan and Sinatra (1991) address this group and their unique problems in the Journal of Reading and show how computer-assisted instruction can be the major instrument in providing a more modern alternative to the existing adult-literacy programs. Finnegan stresses the high interest factor coupled with the wide social acceptance of the CAI approach. Specific needs of the weakest learners can be addressed on a personal level, and computer programs can utilize a language-experience format which has proved to be the most age-appropriate for adults. This approach enables reading and writing skills to be integrated with meaning-making experiences that adults bring to the screen. Results of a 1986 study conducted by Wangberg showed that "an adult functioning on a fifth-grade level resulted in an average one-year gain in ability in just 22 hours of

computer-assisted instruction" (p. 109).

Another advantage of the computer in adult reading instruction is that many software programs used with this group allow for branching to differing ability levels; therefore, students are not totally reliant upon a teacher or tutor to check their work before they continue. This, combined with the empowerment factor mentioned earlier, gives the adult more control of his or her learning, and the individual accomplishments become more meaningful. "By accepting responsibility for educating themselves and by controlling the pace and level of program accomplishment, adults become empowered to succeed" (p. 109).

Yet another significant factor pointed out in the Finnegan & Sinatra article is that computer-assisted reading instruction also brings the adult learner into the world of the future. Adults weak in literacy are denied much access to so much of the world, and once they experience the ease of using a computer, they are eager and highly motivated to learn other things. Reading instruction and knowledge enables new technology changes in everyday functions, from using a bank machine to helping a child search through a library's computerized card catalog. This holistic approach to reading, based upon the particular ability-level of the learner, dictates that the computer is a critical component of a successful adult literacy program. Interactive computer-assisted reading instruction is not only conducive to providing a holistic, meaningful approach but is also tailored to fit the varying and unique adult needs at home, in the community, and in the workplace. Sinatra (1991) ends the article with a thought-provoking statement: "modern CAI formats can transport emergency adult readers from print impoverishment to an enriched world of communication" (p. 115).

Another promising utilization of the computer for assistance in reading instruction is in its use with hearing-impaired students. Grice and Crowley (1989) shared findings in Educational Technology. By merging the technology and graphic capabilities of individualized computer instruction with specific guidelines to control linguistic complexity, programs have proven to be extremely successful. A Cloze technique is encoded on software, and contextual clues and audible interaction provide an array of conditions under which a hearing-impaired child could learn to read. These same procedures can be used with learning-disabled students as well. One particular package, the Children's Assistance Trust (CAT)/Laureate Learning Reading Comprehension Software, has provided teachers of the hearing impaired with yet another tool to enhance their interactional techniques.

In conclusion, the integrated roles of the teacher, parents, administration, and student in computer-assisted reading instruction are addressed by Rickelman and Henk (1991). The authors quickly point out the fact that a computer cannot replace books or the critical roles of parents and teachers in the development of initial reading processes and activities. However, since the microcomputer has found its way into all schools and many homes as equipment costs have decreased, it is a natural motivational tool which is readily available to a growing number of people. In an age governed and monitored by technology, parents often turn to teachers and administrators for advice on how to use the computer to foster positive reading habits for students. There is no doubt that the proper use of the computer increases reading skills in children as well as adults. However, six major instructional and operational factors must be remembered, according to

Rickelman and Henk. First, educators and parents need to be aware of hardware requirements because money spent on a program would be rendered useless because of a lack of the proper peripherals. Second, the software used in reading instruction should be previewed carefully, and local schools, regional educational support facilities as well as colleges and universities should be sources for inquiring about software if one is unsure of its value. Third, educators and parents must make sure the program is age-appropriate so the child can learn independently. Fourth, and an important factor for educators, is that only programs that can be used over a period of time should be purchased. Not only is this necessary from a budget perspective, but such programs offer readers choices and allow students to use programs repeatedly without seeing the same things twice. This will capture and maintain the reader's attention and, in the long run use limited resources more efficiently.

Fifth, according to the authors, is the fact that computers should not be used as a replacement for books or instruction. "Teachers and parents who read to children is still one of the most powerful precursors to later success in the classroom" (p. 509). Computers can be used to augment basic reading skills rather than replace them, for there is no substitute for competent instruction. Lastly, educators, software producers, students and parents need to spend time working together on the formation and evaluation of on-going programs. Often the value of learning from a computer, whether it be for an adult or for a child, is in the cooperation between users. This cooperation allows for higher thinking-skill levels, more tailored instruction, quicker diagnosis of remedial problems, and better use of software and equipment. Without question, technology will provide one of the major avenues for education in the years to come, and educators and other related professionals must know how and when to use the computer effectively so schools can produce literate students who can function in a fast-changing academic and technological world.

METHOD

SUBJECTS:

All subjects were freshmen in the Gaston County School System. The students come from two schools within the county, Cherryville Junior-Senior High School and Grier Junior High School. CJSHS, a small school located in Cherryville, North Carolina, includes students in grades seven through twelve. The town is a small urban center in a rural location, and 53% of parents surveyed were classified as "skilled workers." During 1992, there were 720 students in the school whose drop-out rate was 1.22%, and the freshman class was the largest in the school with an enrollment of 139. The student body was 89% White, 5% Black, 2% Asian, 1% Spanish, 2% Indian, and 1% Other. Cherryville's major industry was Carolina Freight Corporation, and the town of 5,200 has the largest per-capita income of any in Gaston County. The average daily attendance rate at CJSHS was 95.6%, and 38% of the parents had an estimated annual income of between \$30,000 to \$39,000. Thirty-one percent of parents surveyed are high school graduates, and 18% hold a bachelor's degree. This information was secured from current school enrollment forms and the 1990 SACS ten-year report.

Grier Junior High School is located in the large industrialized city of Gastonia, North Carolina and had a 1992 enrollment of 930 students in grades

seven through nine. The current freshman class enrollment was 334, and the total staff numbered 79. The student body consisted of the following ethnic groups: 83% White, 14% Black, 1% Hispanic, 1% Asian, and 1% Other. The average daily attendance rate for GJHS was 95.7%, and the drop-out rate was 0.61%. The average estimated annual income of 32% of the parents was between \$30,000 and \$35,000. Forty percent of parents surveyed were high school graduates, and 22% have graduated from college. This data is a part of Grier's 1990 SACS report, and the attendance and drop-out percentages were secured from the Gaston County Schools' Report Card (1992).

The total public school enrollment in Gaston County was 15,956, making it the fifth largest school system in the state. The school district's total budget was \$69,485,327, and the expenditure per junior high pupil was \$2,158.

Twenty-five freshman from the college-prep classes at each school were chosen as subjects for this study. In both schools these CP classes are open to students with a "C" or above yearly average in eighth-grade English. Class rolls were secured, the names were typed on slips of paper and placed in a box, and the guidance counselors at each school drew names at random from these boxes to designate which 25 students would be chosen for this study. Grier Junior High had 102 names from which to choose, and CJSHS had 61.

Total CAT Reading Scores were utilized for this study. Scores were taken from the third, sixth, and eighth-grade cumulative records. Permission was received from principals at both schools to collect these scores as long as names were not printed in the results. Of the 25 participants from Grier Junior High, 11 were boys, and 14 were girls; at CJSHS there were 16 girls and 9 boys. The average intelligence quota for the control group at Grier was 111, and at CJSHS it was 108. Outside factors such as sports, cultural opportunities, and extra-curricular activities were typical of the students within Gaston County.

Students at both schools attended media-skills classes once every two weeks and had access to library books upon every visit. In addition, they could check out books daily. Two Apple II computers were placed in every English class in grades seven through nine at CJSHS for students to use for the AR program, and they had access before school, after school, at lunch and break, and during certain English classes to take Accelerated Reader tests.

Total CAT reading scores were collected from cumulative folders for the selected students at each school. Other information was gathered from both schools' Southern Association reports, and surveys were handed out to all freshmen college-prep classes. The middle-school supervisor of Gaston County provided additional information on county-wide scores, total junior-high enrollment, and performance indicators.

RESULTS

When the total reading scores were compared on the third, sixth, and eighth-grade CAT tests, it was observed that the students at CJSHS who had participated in the Accelerated Reading program for five consecutive years had a mean score of 726, 780, and 797 respectively. From the third to sixth grade, these students had an average 18 point gain each year, and from the sixth to eighth grade, there was an 8.5 point yearly gain (see Table 1). Students at GJHS who had not participated in the program had a mean score of 736, 767, and 775 for the same time span. Those students showed a 10.3 point gain each year for the first three years observed and a 4.0 point yearly gain from the sixth to eighth grade (see Table 2). Tables 1, 2, and 3 illustrate

that Cherryville Junior Senior High started with a lower mean total reading CAT score (726) than Grier students (736), but had a higher mean total reading CAT score by the eighth grade.

The multiple regression analysis (see Figure 1) predicting 6th grade CAT scores identified two variables as significant predictors: The first was the third-grade CAT score with a multiple r of .56. The second predictor was whether or not students participated in the AR Program. This variable added .17 to the multiple r . Thus, the Accelerated Reader Program has a significant effect on reading achievement. Because the only curriculum variation between the language arts program at the schools was the Accelerated Reader Program, one can conclude that some of the difference between reading scores can be attributed to the Accelerated Reader Program.

The survey handed out at each school to freshman CP English students provided the following information. First, students at CJSHS indicated that on an average, they checked out five books each nine weeks compared to four at GJHS. Secondly, the students who participated in the computerized reading plan also responded that they spent on an average five or six hours per week reading compared to two to three hours a week for those at Grier. Three-fourths of those students surveyed at CJSHS indicated that they liked the program, and 59% of the responses from GJHS showed that they would be interested in participating in a similar program if it were offered. Students at CJSHS believed that the major advantages of the AR method were: that it helped increase their overall vocabulary, they read more and better books, they did not have to write conventional book reports, the system was fair and accurate, and they had immediate reinforcement. The only noted disadvantage was that the choice of books remaining by the ninth-grade year was limited because they had read many beforehand.

DISCUSSION/COMMENTS

It appears from this research project that the use of the computerized reading system had some direct bearing on the mean gain of CAT reading scores over a five-year period. One important factor to note is that the staff at CJSHS has been very enthusiastic and committed to this project, and the support from the parents and county supervisors as well was very supportive. A computer itself does not increase actual ability; however, the excitement, response rate, and "newness" that it generates for the students compared to conventional methods of reading assessment is an advantage in itself. In consideration of the dollars per gain, some may argue that the initial expense of this program does not perhaps warrant the results, but time should prove this investment noteworthy if scores are maintained at the current level or if they would continue to rise. Additionally, the increased circulation of Accelerated Reader books in the library has extended the allotment per child for books, and the initial success of this program has brought much positive response not only from the students, but their parents, and the county school system personnel as well. An ERIC search on this particular software system was done, and to date no information has been indexed. It would be interesting in the future to see if other schools or studies exhibit similar results. This program can be assessed as an excellent motivational tool that develops critical-thinking and reading skills as well.

References

- Allen, D. (1992, April). Software showcase. Teaching K-8, 22 (7), 14-15.
- Cherryville Junior-Senior High School. (1990). Ten-year self-study evaluation for Southern Association of Colleges and Schools (Gaston County Schools' Printing Office). Gastonia, NC.
- Cutler, R. B. & Truss, C. V. (1989, Summer). Computer aided instruction as a reading motivator. Reading Improvement, 26, 103-109.
- Finnegan, R. & Sinatra, R. (1991, October). Interactive computer-assisted instruction with adults. Journal of Reading, 35 (2), 108-114.
- Gaston County Schools. (1992). Gaston County Schools' Report Card - 1991-92 (Osceola Street Printers). Gastonia, NC: Gaston County Schools' Printing Office.
- Grier Junior High School. (1990). Ten-year self-study evaluation for Southern Association of Colleges and Schools (Gaston County Schools' Printing Office). Gastonia, NC.
- Grise, P. & Crowley, D. J. (1989, December). Creating computerized reading instruction for the communicatively-impaired learners. Educational Technology, 29 (12), 37-40.
- Jordan, D. (1992, January 27). Making the grade. Gastonia Gazette, p. 1, 4-A.
- Poplin, L. (1991, October). What's hot and what's not at AERA 1991. The Computing Teacher, 19 (2), 5-8.
- Preston, C. (1990, July 20). Computer literate. Times Educational Supplement, p. 27.

Computerized Reading Study

- Rickelman, R. J. & Henk, W. A. (1990, January). Reading technology and the brain. The Reading Teacher, 43 (4), 334-335.
- Rickelman, R. J. & Henk, W. A. (1990, November). Reading and technology in the future. The Reading Teacher, 44 (3), 262-263.
- Rickelman, R. J. & Henk, W. A. (1991, March). Parents and computers: Partners in helping children learn to read. The Reading Teacher, 44 (7), 508-509.
- Schipper, D. (1991, October). Practical ideas: literature, computers, and students with special needs. The Computing Teacher, 19 (2), 33-37.
- Staff. (1991, September 1). Eight objective studies prove power of the Accelerated Reader. Horizons, p. 1-8.
- Wepner, S. B. (1990, December). Computers, reading software, and at-risk eighth graders. Journal of Reading, 34 (4), 264-268.
- Williams, R. P. & Hoover, D. (1991, May-June). Matching computer software to learning theory in the reading classroom. The Clearing House, 36, (4), 334-336.
- Van Daal, V. H. & van der Leij, A. (1992, March). Computer-based reading and spelling practice for children with learning disabilities. Journal of Learning Disabilities, 25 (3), 186-195.

TABLE 1

Total Reading Scores on CAT Test for Third, Sixth, and Eighth Grades
for current Freshmen at Cherryville Junior Senior High

Student #	Third Grade	Sixth Grade	Eighth Grade
1	702	774	806
2	689	746	787
3	683	774	769
4	703	819	819
5	695	771	788
6	785	765	790
7	779	778	808
8	687	751	787
9	763	810	827
10	693	770	799
11	746	810	818
12	727	810	812
13	700	731	779
14	756	810	816
15	765	810	807
16	764	791	813
17	700	784	800
18	712	789	775
19	763	776	792
20	685	769	787
21	785	772	805
22	654	749	746
23	755	784	807
24	756	774	786
25	703	787	790

MEAN SCORES	726	780	797
-------------	-----	-----	-----

AVERAGE GAIN PER YEAR BY SCHOOL:

FROM THIRD GRADE TO SIXTH GRADE:	18.0 POINT GAIN EACH YEAR
FROM SIXTH GRADE TO EIGHTH GRADE:	8.5 POINT GAIN EACH YEAR

TABLE 2

Total Reading Scores on CAT Test for Third, Sixth, and Eighth Grades
for current Freshmen at Grier Junior High School

Student #	Third Grade	Sixth Grade	Eighth Grade
1	716	766	760
2	770	785	786
3	741	770	774
4	760	802	808
5	683	681	720
6	789	800	807
7	740	754	760
8	743	787	800
9	722	750	759
10	758	768	765
11	756	772	780
12	692	730	746
13	756	796	803
14	722	783	792
15	700	738	753
16	644	669	746
17	773	801	769
18	722	746	757
19	693	710	708
20	785	827	816
21	779	820	808
22	723	760	769
23	741	800	806
24	760	775	790
25	732	790	793
MEAN SCORES	736	767	775

AVERAGE GAIN PER YEAR BY SCHOOL:

FROM THIRD GRADE TO SIXTH GRADE: 10.3 POINT GAIN EACH YEAR
 FROM SIXTH GRADE TO EIGHTH GRADE: 4.0 POINT GAIN EACH YEAR

TABLE 3

CAT Score Comparison for Freshman Students Who Have and Have Not Used
the Accelerated Reader Program

	Third Grade Mean	Sixth Grade Mean	Gain Score	Eighth Grade Mean	Gain Score
School A	726	780	18 pts. yearly	797	8.5 pts yearly
School B	736	767	10.3 pts. yearly	775	4.0 pts yearly

Total Five-Year Mean Gains:

School A - 71 points in total CAT Reading Scores

School B - 39 points in total CAT Reading Scores

FIGURE 1

Variable(s) Entered on Step Number

2.. SCHOOL

Multiple R .74872
 R Square .56059
 Adjusted R Square .55153
 Standard Error 17.64158

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	38513.98996	19256.99498
Residual	97	30188.85004	311.22526

F = 61.87478 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
CAT3	.491596	.052969	.629952	9.281	.0000
SCHOOL	25.916882	3.558283	.494385	7.284	.0000
(Constant)	409.567441	38.447680		10.653	.0000
